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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,307

09/29/2006

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EXAMINER

MATHEWS, ALAN A

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,307	<b>Applicant(s)</b> NAGASAKA ET AL.	
	<b>Examiner</b> ALAN A. MATHEWS	<b>Art Unit</b> 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 52-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-16, 24, 27-30, 34-51 and 57-59 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 17-23, 25, 26 and 31-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/1/06 & 9/29/06 & 3/19/08 & 10/9/08.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group I in the reply filed on August 17, 2009, is acknowledged. The traversal is on the ground(s) that a search and examination of the entire application could be made without serious burden. This is not found persuasive because an exhaustive search in class 359 would be required for the optical part that is not in an exposure apparatus.

The requirement is still deemed proper and is therefore made FINAL.

Claims 52-56 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on August 17, 2009.

### ***Claim Rejections - 35 USC § 112***

2. Claims 8 and 11 provides for “using the exposure apparatus as defined in claim 1” or “using the exposure apparatus as defined in claim 9”, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it

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merely recites a use without any active, positive steps delimiting how this use is actually practiced.

### ***Claim Rejections - 35 USC § 101***

3. Claims 8 and 11 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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5. Claims 1- 4, 7, 8, 12, 13, 15, 24, 30, 34, 35, 38, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Lof et al. (U. S. Patent Application Publication No. 2004/0160582 A1). It is noted Lof et al.'582 is a patent family member of CN 1501175 which was used in a Chinese office action which was filed by Applicant on March 19, 2008. Lof et al. '582 is also a patent family member of EP 1,429,188 which was cited as an X reference in a European Search Report filed by Applicant on October 9, 2008. Lof et al.'582 discloses in paragraphs # 0102 - # 0109 and figures 1 and 2 an exposure apparatus that exposes a substrate W through a liquid 11. Projection optical system PL projects an image of a pattern onto the substrate W. Substrate table WT holds the substrate W. Paragraph # 0157 and figure 11 disclose a member 60 which is liquid repellant (hydrophobic). Element 60 is considered to be the member. Element 60 would be exchangeable or removable or replaceable. With respect to claim 2, element 60 can be exchanged depending on its hydrophobicity. It is further noted that the statement "member is exchanged depending on deterioration of liquid repellence thereof" is a functional statement and is not a structural limitation in an apparatus claim. With respect to claim 3, element 60 has a flat portion substantially flush with a surface of the substrate table WT. With respect to claim 4, the flat portion is arranged around the substrate W. With respect to claim 7, paragraphs # 0025 and # 0157 disclose that the hydrophobic layer could be made of Teflon, which is a polytetrafluoroethylene. With respect to claim 13, sensor 220 in figure 17 is considered to be on a measuring stage.

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6. Claims 38 is rejected under 35 U.S.C. 102(e) as being anticipated by Sewell (U.S. Patent No. 6,809,794). Sewell '794 discloses in figure 1 and column 3, lines 30-67, and column 4, lines 1-40, an exposure method of performing liquid immersion for a substrate 101 by radiating an exposure light onto a substrate 101 through a liquid (which forms a meniscus 108). As disclosed in column 4, lines 23-36, the top of the housing 103 has a surface which is made hydrophobic (liquid-repellent). The housing 103 is a part of the exposure apparatus, which is different from the substrate. The housing 103 could be exchanged when the liquid repellence deteriorates.

7. Claims 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (U.S. Patent No. 5,610,683). Takahashi discloses in figure 1 and column 4, lines 55-67, and column 5, lines 1-43, an exposure method for performing liquid immersion exposure for a substrate 2 by radiating an exposure light beam onto the substrate 2. Figure 1 discloses loading and unloading the substrate holding member 9 (cassette). The substrate holding member 9 includes a flat portion which is substantially flush with the surface of the substrate. The substrate holding member 9 is unloaded after completion of the liquid immersion exposure.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1- 4, 7, 8, 12 - 15, 24, 27- 30, 34, 35, 37 - 51, and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurt et al. (U. S. Patent Application Publication No. 6,882,406) in view of Lof et al. (U. S. Patent Application Publication No. 2004/0160582 A1). Kurt et al. discloses in figures 1 and 2 and column 4, lines 1-19, and column 6, lines 8-13, an exposure apparatus and method wherein an optical element has, on its surface, a hydrophobic (water-repellent) layer. **The optical element could be any optical element involved in directing, focusing, shaping, controlling the projection beam. The optical element may also be a sensor such as an image sensor or a spot sensor.** Since many optical members are exchangeable in an exposure system, the optical element with this hydrophobic layer would be exchangeable. The exchange could depend on the deterioration of the hydrophobicity of the hydrophobic layer. With respect to claim 14 and 39, column 3, lines 27-34 disclose using multiple stages which may be used in preparatory steps. With respect to claim 45, column 3, lines 21 and 22 disclose that the lens could be a refractive optics

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(i.e. glass). Column 4, line 34, further states that generally, the surface of the optical element will be a silica-type surface (i.e. glass). With respect to claims 42-51 and 57-59, column 4, lines 25-67 and column 5, lines 1-5 disclose the materials claimed. Thus, Kurt et al. discloses the invention except for disclosing a member provided on the substrate table. Lof et al.'582 discloses in paragraphs # 0102 - # 0109 and figures 1 and 2 an exposure apparatus that exposes a substrate W through a liquid 11. Projection optical system PL projects an image of a pattern onto the substrate W. Substrate table WT holds the substrate W. Paragraph # 0157 and figure 11 disclose a member 60 which is liquid repellant (hydrophobic). Element 60 is considered to be the member. Element 60 would also be exchangeable or removable or replaceable. With respect to claim 4, Lof et al.'582 discloses the flat portion is arranged around the substrate W. With respect to claim 7, paragraphs # 0025 and # 0157 of Lof et al.'582 disclose that the hydrophobic layer could be made of Teflon, which is a polytetrafluoroethylene. With respect to claim 13, sensor 220 in figure 17 is considered to be on a measuring stage. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide Kurt et al. with a member provided on the substrate table which is hydrophobic in view of Lof et al. '582 for the purpose of obtaining a finer resolution and thus producing a better final product.

***Claim Rejections - 35 USC § 103***

10. Claims 10 and 16 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Lof et al. (U. S. Patent Application Publication No. 2004/0160582 A1). Takahashi discloses in figure 1 and column 4, lines 55-67, and column 5, lines 1-43, an exposure method for performing liquid immersion exposure for a substrate 2 by radiating an exposure light beam onto the substrate 2. Figure 1 discloses loading and unloading the substrate holding member 9 (cassette). Takahashi discloses holding the cassette in place. Takahashi discloses the invention except for having the flat portion of the substrate holding member being liquid-repellent. Lof et al. '582 discloses a flat portion 60 being liquid-repellent. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the flat portion of Takahashi liquid-repellent in view of Lof et al. '582 for the purpose of having a better substrate holding member.

11. Claims 1- 4, 7, 8, 12, 15, 24, 30, 34, 35, 38, and 39 are rejected under 35 U.S.C. 103(a) as being obvious over the International PCT Publication W0 2004/053955 A1 in view of Lof et al. (U. S. Patent Application Publication No. 2004/0160582 A1) or the International PCT Publication W0 2004/093160 A1. It is first noted that Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15. Secondly, Hirukawa et al. (U. S. Patent Application

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Publication No. 2005/0259234 A1) is a patent family member of the International PCT Publication W0 2004/053955 A1 and will be used as the translation. The International PCT Publication W0 2004/053955 A discloses in figure 1 an exposure apparatus that exposes a substrate W and a projection optical system PL that projects an image of a pattern onto substrate W. WST is a substrate table with XY stage 31 and a Z stage 30. Figure 2 and paragraph # 0147 of the translation (Hirukawa et al. '234) discloses auxiliary plates 22a – 22d. The auxiliary plates 22a – 22d are considered to be exchangeable in some manner. Thus, the International PCT Publication W0 2004/093160 A1 discloses the invention in claim 1 except for disclosing that the plates are liquid-repellent. Lof et al. '582 discloses in paragraph # 0025 a substrate table with a hydrophobic layer and in paragraph # 0157 a hydrophobic layer 60 and in paragraph # 0178, coating capillaries with hydrophobic material. With respect to claim 7, paragraph # 0157 discloses that hydrophobic member 60 could be Teflon, which is a polytetrafluoroethylene. The International PCT Publication W0 2004/093160 A1 discloses on page 16, line 33, the use of a hydrophobic coating (i.e. water repellent). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the auxiliary plates 22a – 22d in International PCT Publication W0 2004/053955 A1 with a liquid-repellent coating in view of Lof et al. '582 or International PCT Publication W0 2004/093160 A1 for the purpose of better control the liquid handling and thus producing a better final product.

The applied reference has a common Assignee and a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it

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constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

### ***Allowable Subject Matter***

12. Claims 5, 6, 17-23, 25, 26, and 31-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reasons for the indicated allowability of the claims are as follows:

The prior art does not disclose or suggest an attaching/detaching mechanism which attaches/detaches the member with respect to the substrate table in

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combination with all the other elements recited in the parent claims to dependent claim 5.

The prior art does not disclose or suggest wherein the liquid-repellent member is a stepped member having a first surface which is opposed to a back surface of the substrate and a second surface which extends to outside the substrate along a surface of the substrate in combination with all the other elements recited in the parent claim to dependent claim 17.

The prior art does not disclose or suggest wherein the liquid-repellent member is a substrate holder having a support portion which supports an edge portion of a back surface of the substrate, a flat surface which extends to outside of the substrate along a surface of the substrate, and a side wall which is connected to the flat surface and which is higher than the flat surface in combination with all the other elements recited in the parent claims to dependent claim 22.

The prior art does not disclose or suggest wherein the liquid repellent member includes at least a part of a reference member and a part of an optical sensor in combination with all the other elements recited in the parent claim to dependent claim 25.

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The prior art does not disclose or suggest wherein an exchange timing for the member is determined on the basis of decrease in contact angle of the liquid at the liquid-repellent part of the member in combination with all the other elements recited in the parent claim to dependent claim 31.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patents cited in the PTO-1449 are cited for the same reasons they were cited in Applicant's IDSs

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALAN A. MATHEWS whose telephone number is (571)272-2123. The examiner can normally be reached on Monday through Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alan A. Mathews/  
Primary Examiner  
Art Unit 2882

AM